

nitride thin film produced using an N₂ gas flow rate ratio of 25% permitting diffraction rays from a γ' phase to be observed, claim 1 of the present application is not anticipated by the Takahashi 1993 reference.

Amended claim 2 of the present application recites the coercive force of the iron nitride thin films are 1.0 Gauss. Since the Takahashi 1993 reference does not describe or show a coercive force of the iron nitride thin films being 1.0 Gauss, claim 2 of the present application is not anticipated by the Takahashi 1993 reference.

Amended claims 1 and 2 of the present application are allowable independent claims and claims 10-13 are directly dependent on amended claims 1 or 2, therefore, the dependent claims are patentably distinguishable over the Takahashi 1993 reference for at least the same reasons. Applicant respectfully requests the Examiner to withdraw the 102 rejection to the claims.

The Examiner has rejected claims 1-2 and 10-11 under 35 U.S.C. 103(a) as being unpatentable over the Kano reference. Also, the Examiner has rejected claims 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Takahashi 1993.

Assuming for argument sake that the Examiner's combination is proper, the present application is not obvious over the Kano reference or the Kano reference in view of the Takahashi 1993 reference. Amended claim 1 of the present application recites an iron nitride thin film produced using an N₂ gas flow rate ratio of 25% permitting diffraction rays from a γ' phase to be

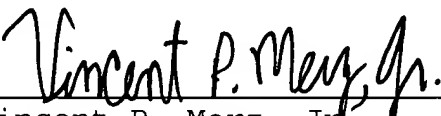
observed. Not only does the Kano reference not teach, describe or show an iron nitride thin film produced using an N₂ gas flow rate ratio of 25% permitting diffraction rays from a γ' phase to be observed, the Kano reference does not describe, teach or show defraction rays from a γ' phase being observed at all. Also, amended claim 2 recites the coercive force of the iron nitride thin films being 1.0 Gauss. The Kano reference does not teach, show or describe the coercive force of the iron nitride thin films being 1.0 Gauss. The present invention teaches and describes that it is possible to obtain magnetic thin films having extremely low coercive forces, which is shown by the coercive force of the magnetic thin films being 1.0 Gauss. Since the Kano reference does not teach, show or describe an iron nitride thin film produced using an N₂ gas flow rate ratio of 25% permitting defraction rays from a γ' phase to be observed as recited in amended claim 1 of the present application, or the coercive force of the iron nitride thin films being 1.0 Gauss as recited in amended claim 2 of the present application, amended claims 1 and 2 of the present application are not obvious over the Kano reference.

Amended claims 1 and 2 are allowable independent claims and claims 10-13 are directly dependent on either claim 1 or claim 2, therefore, the dependent claims are patentably distinguishable over the Kano reference, as well as, the Kano reference in view of Takahashi 1993. Applicant respectfully requests the Examiner to withdraw the 103 rejection to claims 1-2 and 10-13.

Applicant respectfully requests the Examiner to withdraw the 102 and 103 rejections to the claims and forward a Notice of Allowability to the undersigned.

If the Examiner has any questions or comments that would speed prosecution of this case, the Examiner is invited to call the undersigned at 260/485-6001.

Respectfully submitted,



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Encs: Replacement Claims
Marked-up Claims
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Please amend claim 1 as follows:

A magnetic thin film comprising:
an iron nitride thin film having a nitrogen martensite α'
phase with α (002) surface formed on a substrate using an
opposed-target DC sputtering method by means of reactive
5 sputtering with N_2 [gas;] gas wherein said iron nitride thin film
produced using an N_2 gas flow rate ratio of 25% permitting
diffraction rays from a γ' phase to be observed, said α' phase
having diffraction rays observed from only said α (002) surface.

Please amend claim 2 as follows:

2. A magnetic thin film comprising:
iron (α - Fe) thin films and iron nitride thin films
alternately deposited on a substrate by means of an opposed-
target DC sputtering method, said iron nitride thin films having
5 a nitrogen martensite α phase with α (002) surface, said α'
phase having diffraction rays observed only from said α (002)
surface wherein a coercive force of said iron nitride thin films
is substantially 1.0 Gauss.

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